

5200 (1650)
November 18, 1964

AN ANALYSIS OF THE MOUNTAIN PINE BEETLE INFESTATION ON THE
REXBURG DISTRICT, TARGHEE NATIONAL FOREST

HISTORY OF INFESTATION

Three epidemic infestations of Mountain pine beetle have occurred on the Rexburg district in the last 28 years. These appear to follow a 10-15 year cycle.

In 1937 some treating was done. However we were unable to determine the number of trees treated, the extent of infestation or its duration. The only data we were able to obtain regarding this infestation was from local people living in the area at the time. We have also observed on-the-ground indications of projects being carried on about this time. This evidence is noticeable in certain areas by the presence of piled logs which were burned, trees treated by the standing burn method, felled trees which were treated chemically with a flower garden watering can.

In 1945 a build-up was noted in the Pine Creek drainage and some treating was done. Our records give no indication of the numbers of trees effected. Surveys were conducted in the fall of 1946 and treating was begun in 1947. At this time the infestation was fairly general over the western portion of the district and treating was begun near Hawley Gulch. The project continued through 1950 and covered all of the lodgepole pine type south and west of Canyon Creek. A total of 46,000 trees were treated during this period on approximately 21,000 acres. Four camps were established during this project and were located at Hawley Gulch, Mud Springs, Pine Creek and Canyon Creek. The later two being pack camps. Numerous work roads were also constructed but their design was poor, they were never maintained and are no longer serviceable. Many of them have grown over and others have become serious erosion problems. The infestation was arrested on termination of this project.

In 1959 a small project was completed in the Carlton Creek drainage just south of Green Canyon Hot Springs. Our records do not indicate the number of trees treated. In the fall of 1960 a buildup was noted in the Mud Springs and Graham Hollow area. A small treating program of a hot spotting nature was completed in the spring of 61 and 2800 trees were treated. An aerial survey made that fall indicated a general outbreak of the infestation covering the northern portion of the district. The infestation was mostly along the fringes although it did extend into type as much as five miles, was limited primarily to the larger diameter classes of 16" DBH and larger, and contained an estimated 37,000 trees.

In 1961 the timber industry developed a manufacturing plant in St. Anthony with an estimated capacity of 20 MM Bdft. annually. There were some areas on the district within the infestation where sales could be made. The sales were clearcuts with salvage and insect control objectives. The Graham Hollow sale comprising 100 acres of infested type and an estimated 500 M Bdft. was made in October of 1961. An estimated 1,200 infested trees were removed from this sale before insect flight the following spring.

When industry purchased this sale immediate plans were made to accelerate the timber sales program on the district and incorporate sales into the overall treatment program.

In the spring of 1962 a control program was undertaken and everything from the north end of the district to Calamity Creek was treated. Some hot spotting was done between Calamity Creek and Sheep Creek where sales were not feasible. There were 9,800 trees treated during this project.

The timber sales program continued throughout 1962 and four sales were sold. These sales covered 603 acres of infested type with an estimated volume of 4,485 M bdft. The volume from three sales was removed prior to insect flight in 1963 and an estimated 4,500 infested trees were removed.

These sales were all tied to the present transportation system and it became apparent that this system was inadequate to serve the sales potential on the district. A stage II transportation system was requested from engineering and completed the next spring.

Fall surveys in 1962 indicated 59,500 infested trees and the infestation covered all the lodgepole type from Hawley Gulch north and east to the north end of the district on Crooked Creek. The infested area was fairly solid up to four miles in from the edge of type and in some places extended as far as 8 miles.

Spring programs were planned for 1963 and a total of 17,200 trees were treated. Extremely adverse weather conditions prevented completion of planned work. However all the area previously treated in the spring of 1962 was re-worked.

The timber sales program continued with two more sales sold representing 108 acres of infested type and an estimated volume of 895 M Bdft. One sale was logged and 124 acres were cut and an estimated 3000 infested trees were removed.

Fall surveys in 1963 indicated 75,000 infested trees, the infestation was noted in all the lodgepole pine type with the exception of Pine Creek, and a sizeable proportion of successful attacks were in young, thrifty stands. Infestation intensities ran from 1-30 trees per acre. A fall project was undertaken and 7,400 trees were treated before weather conditions forced a shutdown of the project. Four miles of work road were constructed during this project to gain treating access to remote back country.

No treating was done in the spring of 1964 because of a lack of sufficient funds to treat all the infestation on the Forest. The sales program did continue however with one sale being completely logged and another nearing completion. An estimated 1,500 infested trees will be removed from these sales before flight next spring. One other sale was sold representing 262 acres with an estimated volume of 1,580 M Bdft. Four miles of access road were completed on another sale and the sale representing 482 acres and 4,000 M bd. ft. will be advertised before December 31, 1964.

No operational survey was made in 1964 but a reconnaissance and trend survey was made. This consisted of 200 - 1/5th acre plots taken over the entire infestation. Plots were laid out on an aerial mosaic before field work began and spaced to give a representative sample. Infested alien lands were included in this survey. Survey results and our analysis of these results are detailed in the next section of this report.

1964 RECONNAISSANCE AND TREND SURVEY RESULTS

The survey was designed to gain information relative to the general trend of the infestation, major diameter classes of trees being successfully attacked, total extent of the infestation and the relation of alien lands to the overall infestation.

A total of 34,460 acres were surveyed comprised of 28,180 on National Forest, 5,480 State of Idaho, and 800 private. Percent of cruise on National Forest was 1.67 and .85 on state and private.

Survey results indicated 910,200 infested trees on National Forest and 82,516 on state and private. These figures were derived as a matter of course during tabulation of the survey results. It should be stressed that this survey was not primarily designed to gain this type of information. It is a matter of question how the sample would stand up statistically and it may be these numbers are 50% to 75% high.

The following is the analysis of the four basic objectives of the survey as substantiated by field records and observations.

1. General Trend

The general trend of the infestation is upward and has been since the 1960 fall survey. However, the trend on private land seems to be level and it is our best estimate there will be an immediate down trend on these lands. These lands are widely scattered and for the most part are comprised of small narrow stringers of type in the bottoms of the drainages. Most of the lodgepole in these stringers has already been killed.

2. Major Diameter Classes Effectuated

The 1960 survey indicated the highest percentage of attack in the 16" DBH range and larger. This trend was also true of the 1961 attacks. General field observations in 1962 however indicated a large number of attacks falling in the 12" DBH class. In 1963 many new hits were observed in 9-12" DBH material.

Four diameter ranges were established (0-6", 6-12", 12-20", and 20"+) and each infested tree in the plots were placed in their respective diameter range.

Tabulation of this data showed 5% of the hits in the 0-6" diameter class, 67% in the 6-12", 26% in the 12-20", and 2% in the 20" and larger diameter class. General field observations throughout the survey substantiated this as a general trend over the entire infestation.

The older over-mature stands have already been heavily killed and the infestation is continuing an upward trend but the loss is now taking place in the younger thrifty stands. Without help from natural factors or treating measures this trend can be expected to continue. Approximately 40% of the infested area on National Forest land is comprised of this type.

3. Total Extent of the Infestation.

Total extent of the infestation is shown on the attached planimetric map.

4. Relation of Alien Lands to National Forest.

As previously stated a downward trend is expected on the private land and it is not felt these lands will have any appreciable effect on the future status of the infestation on National Forest.

State lands on the western portions of the infestation are a different matter. These lands are immediately adjacent to the Forest and are heavily infested. The Forest lands in this area have some heavy hot spots but for the most part are lightly infested. The type is mainly mature sawtimber and highly susceptible to further attack. One sale has already been sold in this area and another will be sold by December 31st. Further sales are not planned as the remaining timber is located on areas considered inoperable. This timber is also located in the heaviest use area on the district and sales of any value could not be made without major revisions or adjustments in the district multiple use guides. The heavy recreational use of this area must be given serious consideration in our management goals.

The state has an active timber sales program in progress and in the long run this will definitely aid our problem. It is estimated however that no appreciable effects will be realized until 1966.

PRESENT STATUS OF INFESTATION, PROBABLE FUTURE,
AND EFFECT ON OTHER RESOURCES

Biological evaluation of brood densities taken this fall indicated high to very high epidemic conditions in all plots sampled. Plots were relatively well scattered over the entire infestation both as to area and elevation.

As about 95% of the lodgepole pine type is presently infested the boundaries of the infestation will not appreciably increase on the Rexburg District. However, there are areas within these boundaries with only light infestation intensities. Some of them are high value recreation areas. A large portion of the infestation is not accessible from the present transportation system.

Without some means of control, either by natural or artificial means, the infestation will very probably continue in an epidemic state for another 3 or 4 years. There will probably be very little lodgepole above 8" left on the district at the end of this time. The district is now and it can be expected to become an even greater breeding ground for the spread of the infestation. A great deal of last years flight settled on the Teton Basin District north of Packsaddle basin. An even greater flight can be expected to invade this area in 1965. Some invasion can probably be expected to occur on the east side of Pine Creek on the Swan Valley District. With the large flight expected this next spring it is not entirely improbable that some of the insects could reach the northern end of the Caribou NF and the Ashton front.

Final effects on other resource values are extremely difficult to predict and the following analysis by resource is based on current conditions. These effects will undoubtedly be magnified if the infestation runs its course.

1. Timber

Since the start of the current infestation in 1959 it is estimated that 35-40 MM bd. ft. of timber has been lost. Seventy five percent of this was probably in merchantable sawtimber.

In 1961 an active sales program was begun and up to December 31, 1964 a total of 11,450 M bd. ft. will have been sold. A total of 4,400 M Bd. ft. will have been salvaged to that same date.

It is estimated that the allowable cut has been reduced from 75% - 80% at this time. Future lodgepole pine management on the district has been set back as much as 50 years. Some programs can be continued for the next 2 or 3 years but sales will probably be small, widely scattered, and generally unfavorable to industry. The present transportation system would also need to be expanded. With such an expansion some larger sales may still be feasible.

Small product material has not been effected for the most part and an active program of post and pole sales can continue to be carried out. There will probably be an increased demand for firewood and dry cellar timbers. This increase would last for about 8 years.

There are portions of the infested area containing a mixed DF-LPP stand. These stands appear to be converting to DF and the mortality of lodgepole should hasten this transition.

2. Range

Range values have not and will not be detrimentally effected from the forage standpoint. On the contrary, forage production may increase slightly with the disappearance of crown cover in areas of extremely heavy kill. This would be a relatively short term situation however and would not effect present capacity figures. Some problems can be expected in moving sheep through timbered areas in the next 8-10 years as the snags begin to fall. This should not be too serious.

3. Watershed

Watershed conditions have not been materially effected from the insect damage.

4. Wildlife

Wildlife values have not been appreciably effected. Some loss of cover, roosting areas for grouse and squirrel nests have undoubtedly been experienced but the effects are minor. Big game has not been effected at all and browse conditions may improve with the opening of crown cover. This would only effect summer range however and wouldn't have any effect on big game populations.

Fisheries values do not appear to have been materially effected by the loss of streamside cover. Some effects will very probably be felt in the future however.

5. Recreation

Recreation values have been materially decreased in several NFORR sites with the loss of timber cover. Additional sites will be more severely effected in the future. Some loss is occurring in the vicinity of the Cold Springs and Tablerock Campgrounds. Heavy losses in these vicinities will be very detrimental to recreational values.

Aesthetic values have been seriously reduced within the entire infested area. This loss will become more pronounced.

Huckleberry stands in the Kelly Canyon - Hawley Gulch area could be reduced in total acreage as crown cover opens with mortality. Field observations in this area have indicated a definite huckleberry-lodgepole relationship. The huckleberries in this vicinity are an extremely important recreational resource. There has not been any appreciable effect as yet but only because infestation intensities are relatively light in the area.

6. Other

Of special importance has been the increased fire hazard on the district. This problem is becoming more pronounced each year with the increasing numbers of snags and current "red tops". These pose an extremely serious fire hazard and the next two years will be very critical. It is entirely possible that with the right conditions a large fire could occur and it is even possible it could cover half or more of the infested area.

In the event of such an occurrence resource values would be almost totally destroyed on the burned area for many years.

RECOMMENDATIONS

1. Effect treating programs in areas of high recreational value and low infestation intensity to protect and hold resource values at their present level and reduce the breeding ground potential. This would probably require 3 to 4 years of consecutive treating.

Priority areas for treating would be Kelly Canyon-Hawley Gulch and Pine Creek. Other areas which should also be treated include all lodgepole pine type south of Limekiln Canyon, Ruby Creek and Canyon creek and the plateau west of Ryan peak.

Treating should be carried on in both the spring and fall, be contracted as much as possible and treating methods should include chemical treating and fall burning.

2. Allow the infestation to run its course on all national forest lands north of the red line shown on the attached map.

Some private land owners may indicate a desire to treat their own lands. In this event technical advice should be provided. If no interest is shown allow the infestation to run its course.

If the state ever undertakes a project offer whatever assistance we can or offer to enter a co-op agreement. Continue to encourage the state to undertake an active program. Until such time however do not consider treating these lands in our programs.

3. Continue the timber sales program on the district but prior to any further sale offerings determine if possible local industry feelings on the size of sale offerings they would purchase.

Study feasibility of alternate methods of control or salvage by logging such as:

Pay small logging operators on a tree basis to remove infested trees as either products or sawtimber from the forest. Pile the resulting slash with insect control money or require the operator to do it. Make no charge to the operator for stumpage as the primary purpose would be insect control through removal. All trees would be selected by a Forester and most of them would be in groups.

The possibility of a force account crew logging and decking infested trees in areas where they are readily accessible and could still be burned to effect control in the event no one purchased the decked logs. Require any decks so made to be removed before insect flight and charge for them on a miscellaneous property sale appraised rate. This crew would pile the resultant slash and all charges would be to insect control.

Offer as a sale at the minimum 50 cent rate the volume estimated in readily accessible patches to local industry under one contract. Require payment for stumpage only and handle the slash and TSI through insect and P&M funds as a force account job. Specify in the contract that areas to be logged would be selected by the Forest Service taking into consideration accessibility and infested trees.

All of these proposals are rough and certainly need further study. It is felt however they do have merit and should be considered.

4. Expand the district transportation system by October 1965 to include the proposed Wright Creek and Graham Springs roads, completion of the Calamity Creek road and access into and around the north end of Thousand Springs Valley.

The stage II transportation system now delineates these routes in general but would need review and approval.

Development of this system would allow us to treat some areas of low intensity infestations thus protecting remaining stands of timber and other resource values.

The system would also enable us to harvest additional timber on a salvage basis.

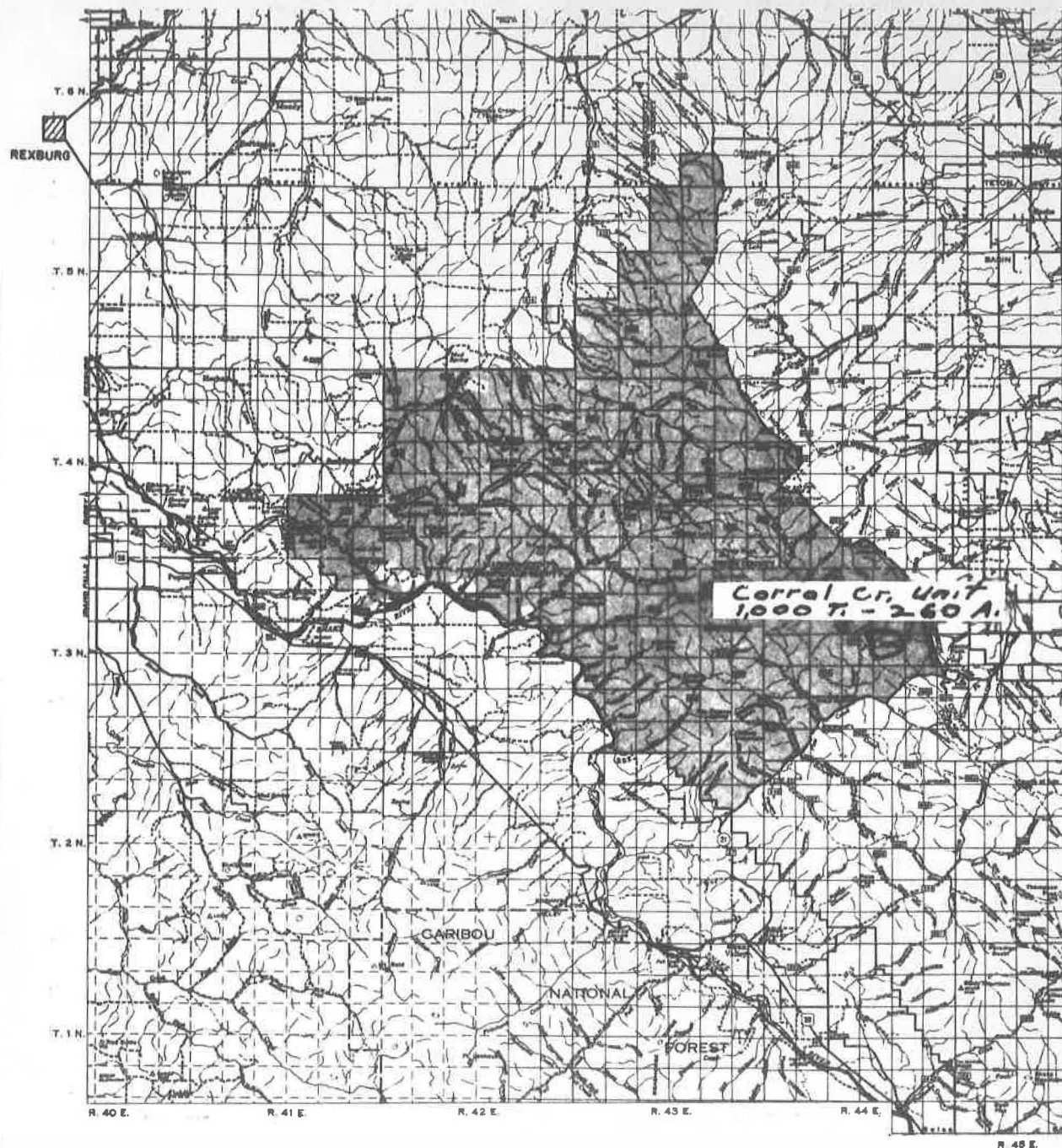
5. Increase fire prevention financing and manning for at least the next two years.
6. If any project is undertaken financing must be adequate to do the complete planned job. It must also be received soon enough to give the unit time to gear up to the job. Financing should take into consideration both spring and fall work.

Prepared by: [Signature]

Date 11/20/64

Title District Forest Ranger

cc: Historical files



U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE

REXBURG RANGER DISTRICT

D-6

TARGHEE NATIONAL FOREST

IDAHO

BOISE MERIDIAN

1964



Force Account Area - 
Contract Area - 

LEGEND

- | | |
|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
|  National Forest Boundary |  Railroad |
|  Adjacent National Forest Boundary |  Traditional Line |
|  Paved Road |  Forest Supervisor's Headquarters |
|  All Weather Road |  Ranger Station |
|  Dirt Road |  Fireman or Ranger Station not permanently occupied |
|  Private Road |  Permanent Lookout Station |
|  Interstate Highway |  Transient Lookout Station |
|  U.S. Highway |  Transient Lookout Station and Permanent Lookout Station |
|  State Highway |  Permanent Site, Forest Service |
|  Forest Department Road |  House, Cabin, or Other Building |
|  Road numbers are not shown. |  National Forest Land, Simple District only |

3-25-65
995

Force Account Area - 

Contract Area - 

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE

PORCUPINE RANGER DISTRICT

D-4

TARGHEE NATIONAL FOREST

IDAHO AND WYOMING

BOISE AND SIXTH PRINCIPAL MERIDIANS

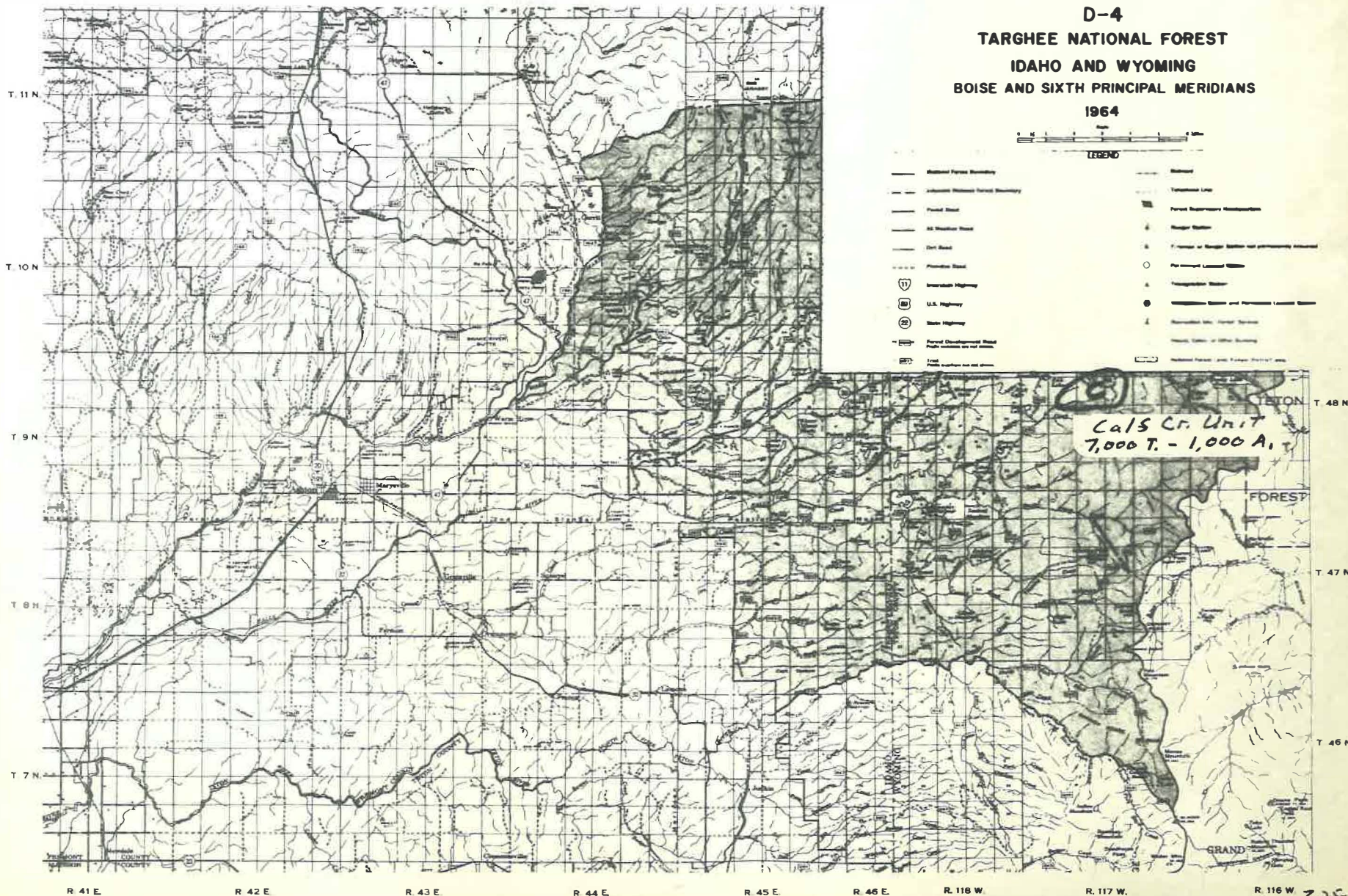
1964



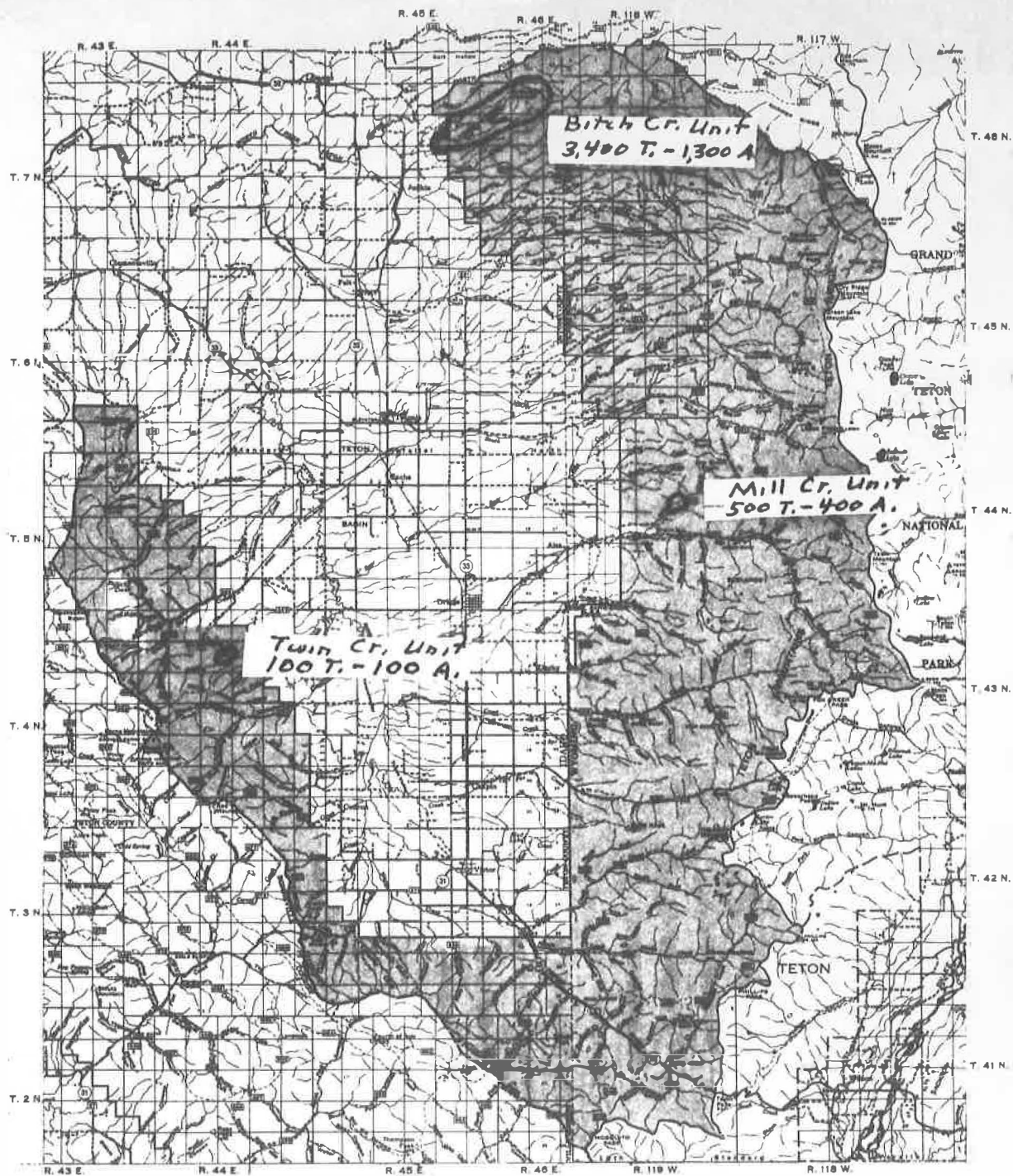
LEGEND


- | | |
|-----------------------------------|---------------------------------------------------------|
| National Forest Boundary | Boundary |
| Adjacent National Forest Boundary | Township Line |
| Forest Road | Forest Reserve Withdrawal |
| All Weather Road | Ranger Station |
| Dirt Road | Fire Lookout or Ranger Station not permanently occupied |
| Private Road | Permitted Limited Entry |
| Interstate Highway | Transportation Station |
| U.S. Highway | Wilderness Station and Permitted Limited Entry |
| State Highway | Recreation Site, Capital Service |
| Forest Development Road | Historic Sites or Other Services |
| Private Development Road | |
| Road | |

National Forest, 1964, Ranger District 404



3-25-65
ggg



Force Account Area = 
 Contract Area = 

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE

DRIGGS RANGER DISTRICT

D-5

TARGHEE NATIONAL FOREST
IDAHO AND WYOMING

BOISE AND SIXTH PRINCIPAL MERIDIANS

1964

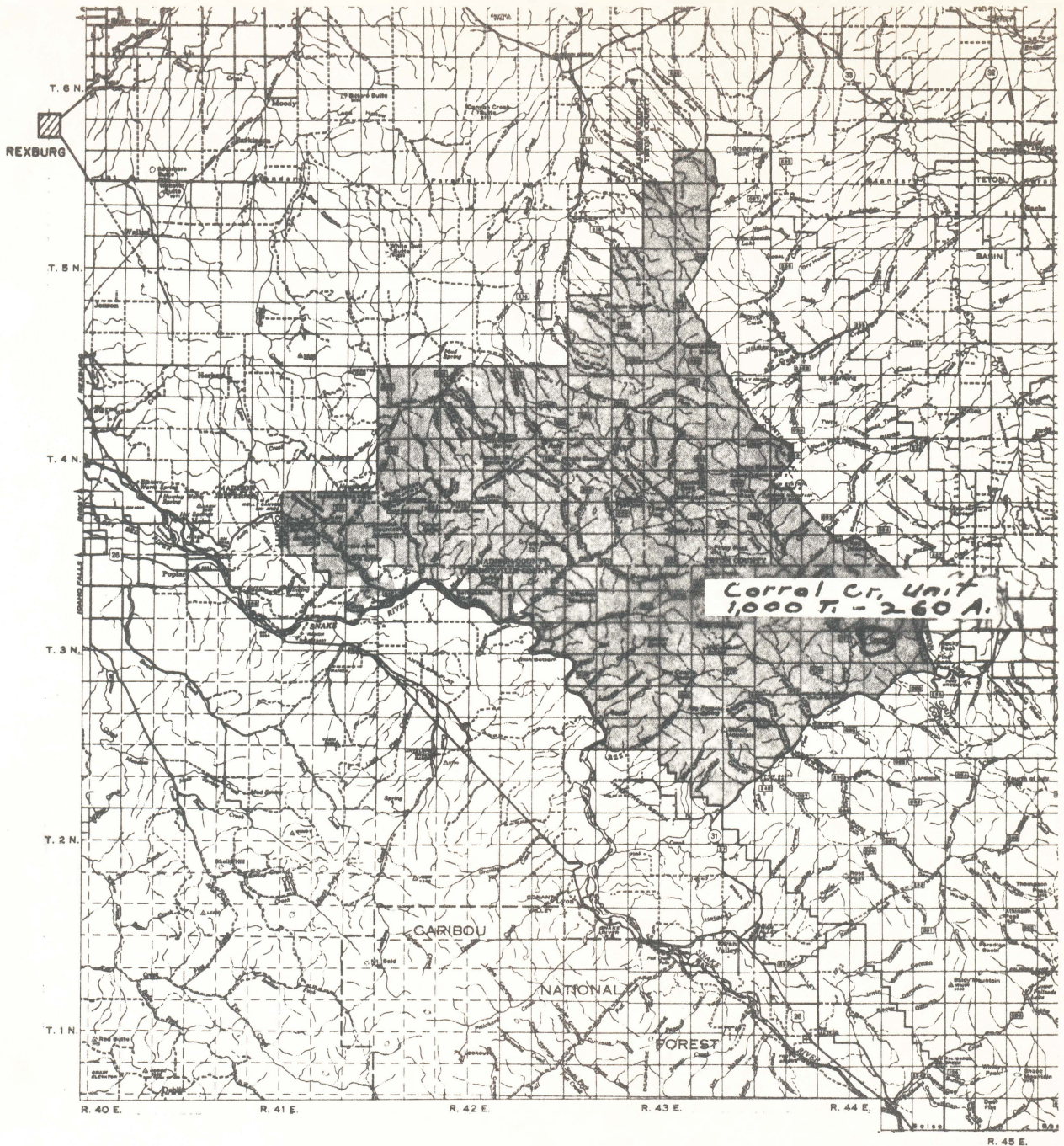


LEGEND

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|-------------------------------------------------------------------------------------|-----------------------------------|---------------------------------------------------------------------------------------|--------------------------------------------------------|
|  | National Forest Boundary |  | Railroad |
|  | Adjacent National Forest Boundary |  | Township Line |
|  | River |  | Person Supervisor's Headquarters |
|  | No Highway Road |  | Ranger Station |
|  | Dirt Road |  | Property of the Ranger Station not dominantly forested |
|  | Fireweed Road |  | Permanent Lookout Station |
|  | Interstate Highway |  | Triangulation Station |
|  | U.S. Highway |  | Triangulation Station and Permanent Lookout Station |
|  | State Highway |  | Recreation Site, Forest Service |
|  | Forest Department Road |  | House, Office, or Other Building |
|  | Trail |  | National Forest Land, Ranger District only |

3-25-65

992



U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE

REXBURG RANGER DISTRICT

D-6

TARGHEE NATIONAL FOREST

IDAHO

BOISE MERIDIAN

1964



Force Account Area -
Contract Area -

LEGEND

- | | |
|-----------------------------------|-----------------------------------------------------|
| National Forest Boundary | Railroad |
| Adjacent National Forest Boundary | Telephone Line |
| Forest Road | Forest Supervisor's Headquarters |
| All-Weather Road | Ranger Station |
| Dry Road | Fireman or Ranger Station not permanently occupied |
| Private Road | Permanent Lookout Station |
| Interstate Highway | Triangulation Station |
| U.S. Highway | Triangulation Station and Permanent Lookout Station |
| State Highway | Recreation Site, Forest Service |
| Forest Development Road | House, Cabin, or Other Building |
| Trail | National Forest Land, Ranger District only |

3-25-65
99%

Force Account Area - 

Contract Area - 

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE

PORCUPINE RANGER DISTRICT

D-4

TARGHEE NATIONAL FOREST

IDAHO AND WYOMING

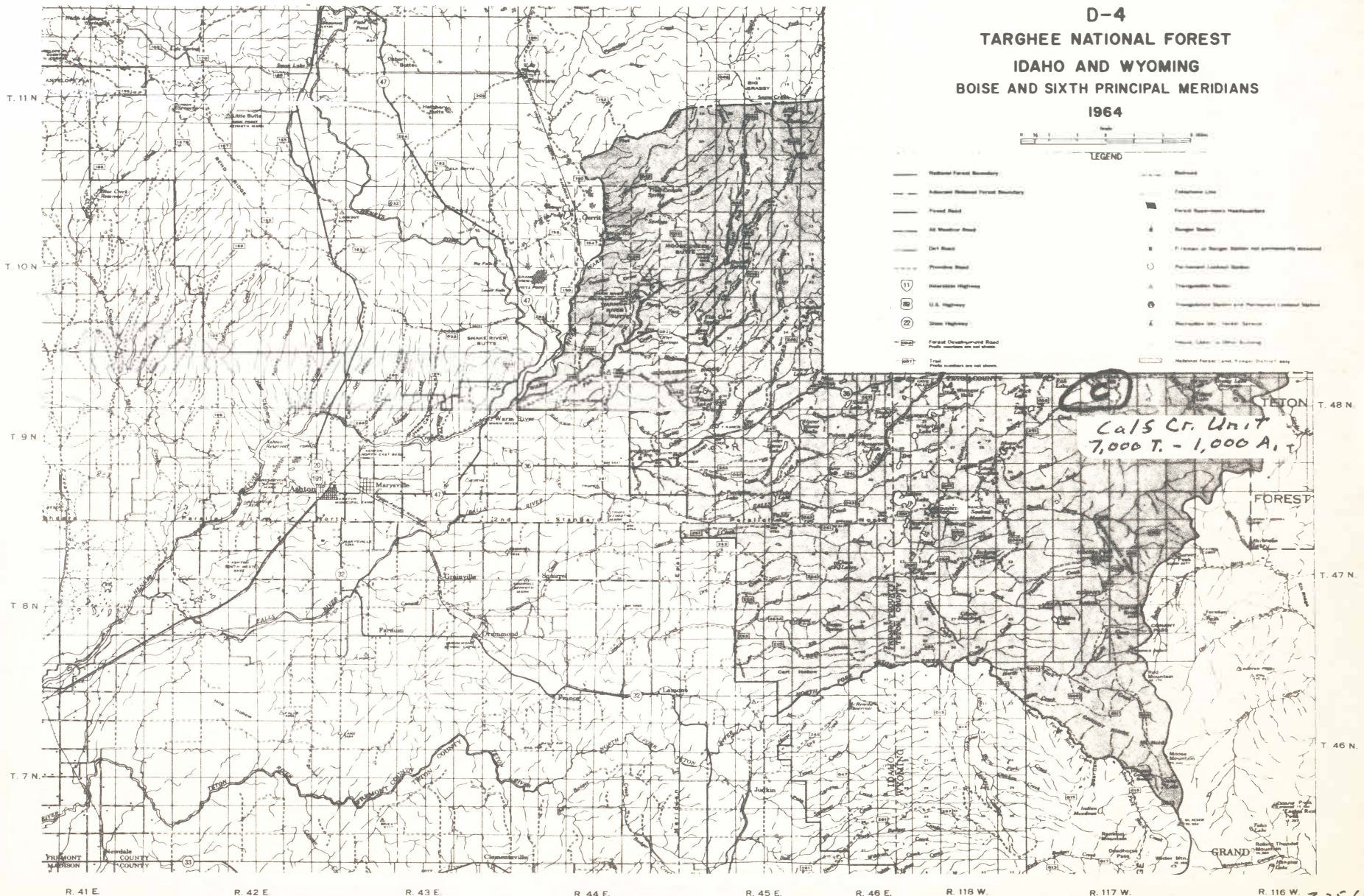
BOISE AND SIXTH PRINCIPAL MERIDIANS

1964

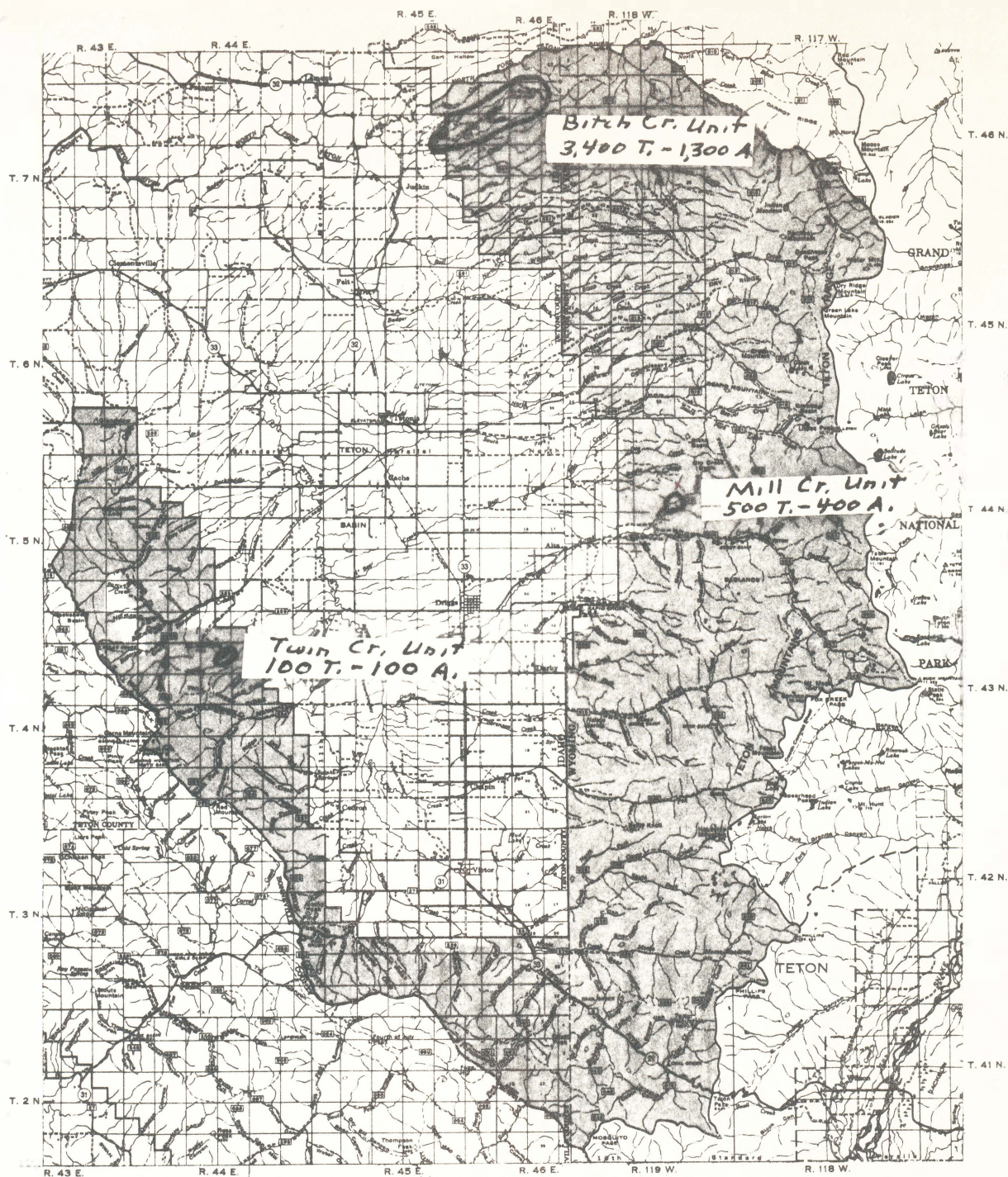




LEGEND

- | | |
|-----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
|  National Forest Boundary |  Railroad |
|  Adjacent National Forest Boundary |  Telephone Line |
|  Forest Road |  Forest Supervisor's Headquarters |
|  All Weather Road |  Ranger Station |
|  Dirt Road |  Fireman or Ranger Station not permanently occupied |
|  Provisional Road |  Permanent Lookout Station |
|  Interstate Highway |  Transportation Station |
|  U.S. Highway |  Transportation Station and Permanent Lookout Station |
|  State Highway |  Recreation Site, Camp, Service |
|  Forest Development Road |  Forest, Cabin, or Other Building |
|  Trail |  National Forest Land, Ranger District only |
|  Trail | |
|  Trail | |



3-25-65
982



Force Account Area = 
 Contract Area = 

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE

DRIGGS RANGER DISTRICT

D-5

TARGHEE NATIONAL FOREST

IDAHO AND WYOMING

BOISE AND SIXTH PRINCIPAL MERIDIANS

1964



LEGEND

- | | |
|-----------------------------------|------------------------------------------------------|
| National Forest Boundary | Railroad |
| Adjacent National Forest Boundary | Foreclosure Line |
| Forest Road | Forest Supervisor's Headquarters |
| Old Weather Road | Ranger Station |
| Dirt Road | Flammable or Ranger Station not permanently occupied |
| Firefighting Road | Permanent Lookout Station |
| Interstate Highway | Fire Lookout Station |
| U.S. Highway | Transposition Station and Permanent Lookout Station |
| State Highway | Recreation Site, Forest Service |
| Forest Development Road | House, Cabin, or Other Building |
| Private Road | National Forest Land, Ranger District, 1964 |
| Trail | |
| Private Road (not shown) | |

3-25-65
992